

VOC-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. No other VOCs were detected in any of the remaining confirmation soil samples collected from the final limits of the remedial excavation. Analytical results are summarized in Table 10.

The VOC 1,1,2-Trichloro-1,2,2-trifluoro was detected in sediment collected from both dry wells at Cleanup Action Area 3( samples DrywellSeds-2 and DrywellSeds-3) at concentrations significantly less than the corresponding MTCA Method B protective value of 2,400,000,000 µg/Kg. Nonetheless, the sediment removed from within the dry wells was transported to Hillsboro Landfill for disposal. Analytical results are summarized in Table 11.

#### SVOCs

No more than seven SVOCs were detected in soil samples Drywell-3-(14.5-15) and Stockpile-3 at concentrations less than corresponding established MTCA screening levels. Nonetheless the soil represented by sample Drywell-3-(14.5-15) was removed during overexcavation activities and transported off site to Hillsboro Landfill for disposal. The stockpiled soil was also removed and transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil samples collected from base of the overexcavated material indicate that the SVOC-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. No other SVOCs were detected in any of the remaining confirmation soil samples collected from the final limits of the remedial excavation. Analytical results are summarized in Table 12.

#### PAHs

Three PAHs, including fluoranthene, phenanthrene, and pyrene were detected in soil sample Drywell-3-(14.5-15). MTCA has not established a corresponding cleanup level for phenanthrene. Fluoranthene and pyrene were detected at concentrations significantly less than the established corresponding MTCA Method B protective values (3,200,000 µg/Kg for fluoranthene and 2,400,000 µg/Kg for pyrene). Nonetheless, soil represented by this sample was removed during overexcavation activities and transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil sample collected from the base of the overexcavated material indicate that the PAH-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. No other PAHs were detected in any of the remaining confirmation soil samples collected from the final limits of the remedial excavation. Analytical results are summarized in Table 13.

#### Metals

Six metals, including arsenic, chromium, copper, lead, zinc, and/or mercury were detected in each of the samples submitted for analysis. The detected concentrations were less than the corresponding MTCA screening levels.). Analytical results are summarized in Table 14.

#### **6.8.2.4 Backfill Activities**

Each of the remedial excavations completed in Cleanup Action Area 3 were backfilled to the existing grade using clean excess soil that was removed during the UST remedial excavation activities. Prior to using the clean overburden material as backfill, a total of 14 soil samples were collected from the stockpile, in accordance with the approved Final Proposed Cleanup Action Plan (URS, 2006).

## **6.9 CLEANUP ACTION AREA 4 – SOUTHERN PORTION OF FORMER EVERGREEN FLIGHT SERVICE**

This area is shown on Figures 2 and 11. The area included:

- A former paint booth
- One septic tank
- Two dry wells
- Associated piping

One septic tank and two dry wells were identified associated with Cleanup Action Area 4. One dry well was connected to a septic tank and one dry well appeared to be associated with surface water drainage. The dry well (identified as dry well-4) connected to the septic tank was constructed of three perforated concrete collars measuring approximately 3 feet in diameter. The total depth of this dry well was approximately 7 feet BGS. A catch basin was connected directly to the second dry well (identified as dry well-5). This dry well was not connected to a septic system and appeared to be designed to collect surface water runoff at this area of the project site. This dry well was constructed of two perforated concrete collars measuring approximately 4.5 feet in diameter. The total depth of this dry well was approximately 13.5 feet. The layout of the former paint booth, septic system and isolated dry well identified at Cleanup Action Area 4 is shown on Figure 11.

### **6.9.1 Non-Excavation Activities**

#### **6.9.1.1 Septic System Decommissioning**

Ted-Dee Bear Septic Service completed pumping the contents from the septic tanks on March 17, 2008. The septic tank was subsequently abandoned by demolishing the concrete lids and filling the void spaces with clean excess soil that was removed from Cleanup Action Area 3 and/or pea gravel.

Bones Construction decommissioned the entire dry well connected to the septic tank by removal on March 19, 2008. The associated piping was removed on April 24, 2008. The entire dry well not connected to a septic tank was decommissioned by removal on March 20, 2008. No liquid or sludge was observed within either dry well. Coarse rounded drain rock was observed surrounding each dry well during the decommissioning activities. The concrete rubble generated during the decommissioning activities was recycled on site. The stockpiled material generated during the decommissioning activities was ultimately disposed at Hillsboro Landfill.

### **6.9.2 Excavation Activities**

#### **6.9.2.1 General**

Remedial excavations at Cleanup Action Area 4 included two isolated excavations associated with the dry well decommissioning activities and one isolated excavation associated with the former paint booth. Additionally, soil samples were collected from the material temporarily stockpiled during the decommissioning activities prior to being transported off site to Hillsboro Landfill for disposal. The samples collected from the stockpiled material were analyzed for the same constituents as the confirmation soil samples collected from the limits of the remedial excavations. The final limits of these remedial excavations are shown in Figure 11.

The vertical depths of the excavations associated with the dry well connected to the septic tank and isolated dry well were approximately 10 and 17 feet BGS, respectively. Confirmation soil samples were collected from the sediment within each dry well, from native soil beneath each dry well, and beneath the removed piping. Confirmation soil samples were analyzed for the contaminants presented in Table 1 in accordance with the methodology presented in Table 1. Additionally, soil samples were collected from the temporarily stockpiled material removed during decommissioning activities prior to being transported off site to Hillsboro Landfill for disposal.

In general, the vertical depth of the excavation associated with the former paint booth was approximately 3.5 feet BGS. Confirmation soil samples were collected from the sidewalls and base of the final excavation limits at the locations shown on Figure 10 and analyzed for the contaminants presented in Table 1 in accordance with the methodology presented in Table 1.

#### **6.9.2.2 Field Screening Results**

PID readings from the vapor headspace tests performed on confirmation soil samples submitted for chemical analysis from Cleanup Action Area 4 were 0.0 ppm. No visual or sheen evidence of contamination was observed in any of the confirmation samples submitted for chemical analysis. The field screening results are summarized in Table 15.

#### **6.9.2.3 Analytical Results**

##### **Gasoline-, Diesel- and Heavy Oil-Range Hydrocarbons**

Diesel- and heavy oil-range hydrocarbons were quantitatively detected in soil sample Stockpile-5 at concentrations significantly less than the corresponding MTCA Method A cleanup level of 2,000 mg/Kg. Nonetheless, this stockpile of soil was removed and ultimately transported off site to Hillsboro Landfill for disposal. Petroleum hydrocarbons were not detected in any of the remaining confirmation soil samples. Analytical results are summarized in Table 15.

##### **VOCs**

The VOCs acetone and 1,1,2-Trichloro-1,2,2-trifluoro were detected in sample Piping-14(0.5-0.75) and DrywellSeds-4, respectively, at concentrations significantly less than the corresponding MTCA Method B protective values. Soil represented by sample Piping-14(0.5-0.75) was removed during overexcavation activities and the sediment was transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil samples collected from the final limits of the remedial excavation indicate that the VOC-impacted soil successfully removed and transported to Hillsboro Landfill for disposal, except at the location of sample Piping-14ox(1.5-2.0). Acetone was detected at a concentration of 67 µg/Kg in sample Piping-14ox(1.5-2.0), which is significantly less than the corresponding Method B Protective Value of 8,000,000 µg/Kg. No other VOCs were detected in the remaining confirmation soil samples. Analytical results are summarized in Table 16.

##### **SVOCs**

SVOCs were not detected in any of the soil samples collected from Cleanup Action Area 4. Analytical results are summarized in Table 17.

## **PAHs**

PAHs were not detected in any of the soil samples collected from Cleanup Action Area 4. Analytical results are in Table 18.

## **Metals**

Arsenic, cadmium, chromium, copper, lead, zinc, and/or mercury were detected in each of the soil samples associated with the septic system. However, only cadmium in samples DrywellSeds-4 and Stockpile-4 (collected from the sediment and soil generated during the decommissioning activities) was detected at concentrations greater than the corresponding MTCA Method A cleanup level. The stockpiled sediment and soil generated during decommissioning of Drywell 4 and Drywell 5 was transported off site to Hillsboro Landfill for disposal. Analytical results are summarized in Table 19.

### **6.9.2.4 Backfill Activities**

Each of the remedial excavations completed in Cleanup Action Area 4 were backfilled to the existing grade using clean excess soil that was removed from Cleanup Action Area 3 or crushed concrete that had been stockpiled on site. Backfilling was conducted in accordance with the backfilling procedures outlined in Appendix A.

## **6.10 CLEANUP ACTION AREA 5 – FORMER VANCOUVER CHAINSAW AND SERVICE**

This area is shown on Figures 2 and 12.12. The area included:

- One septic tank
- One dry well
- Associated piping
- A former drum storage area

One septic tank was identified at Cleanup Action Area 5. As described below, this septic tank did not have a concrete bottom. The septic tank was connected to one active dry well (identified as dry well-1). The active dry well connected to the septic tank was constructed of two perforated concrete collars measuring approximately 3 feet in diameter. The total depth of the active dry well was approximately 13 feet BGS. Coarse rounded drain rock was observed surrounding the dry well. The septic system identified at Cleanup Action Area 5 is shown on Figure 12.

### **6.10.1 Non-Excavation Activities**

#### **6.10.1.1 Septic System Decommissioning**

Ted-Dee Bear Septic Service completed pumping the contents from the septic tank on March 17, 2008. Upon removal of the contents, it was apparent this septic tank did not have a concrete bottom. Therefore, soil samples were collected from soil observed at the base of the tank, and based on analytical results, overexcavation activities were completed. After completing remedial excavation activities, the septic tank was subsequently abandoned by demolishing the concrete lid and filling the void spaces with clean excess soil that was removed from Cleanup Action Area 3 and/or pea gravel. Disposal receipts are included in Appendix E.

Bones Construction decommissioned the entire dry well by removal on March 17, 2008 and the associated piping on April 25, 2008. No liquid or sludge was observed within the dry well. Coarse rounded drain rock was observed surrounding the dry well during the decommissioning activities. The concrete rubble generated during the decommissioning activities was recycled on site. The stockpiled material generated during the decommissioning activities was ultimately disposed at Hillsboro Landfill.

## **6.10.2 Excavation Activities**

### **6.10.2.1 General**

Remedial excavations at Cleanup Action Area 5 included an excavation associated with dry well and septic tank decommissioning activities and a shallow excavation associated with the former drum storage area. The final limits of these remedial excavations are shown on Figure 12.

The vertical depth of the excavation associated with the dry well connected to the septic tank was approximately 13.5 feet BGS. Confirmation soil samples were collected from the sediment within the dry well, from native soil beneath the dry well, and beneath the removed piping. Confirmation soil samples were analyzed for the contaminants presented in Table 1 in accordance with the methodology presented in Table 1. Additionally, soil samples were collected from the temporarily stockpiled material generated during decommissioning activities prior to being transported off site to Hillsboro Landfill for disposal. The samples collected from the stockpiled material were analyzed for the same constituents as the samples collected from the excavations.

The vertical depth of the excavation associated with the former drum storage area was limited to approximately 0.5 foot BGS. A confirmation soil sample was collected from the base of the excavation and analyzed for the contaminants presented in Table 1 in accordance with the methodology presented in Table 1.

### **6.10.2.2 Field Screening Results**

PID readings from the vapor headspace tests performed on confirmation soil samples submitted for chemical analysis from Cleanup Action Area 5 were 0.4 and 0.5 ppm. No visual or sheen evidence of contamination was observed in any of the confirmation samples submitted for chemical analysis. The field screening results are summarized in Table 20.

### **6.10.2.3 Analytical Results**

#### **Gasoline-, Diesel- and Heavy Oil-Range Hydrocarbons**

Petroleum hydrocarbons were neither qualitatively nor quantitatively detected in the soil samples submitted for analysis from Cleanup Action Area 5. Nonetheless, the temporarily stockpiled sediment and soil generated during the decommissioning activities associated with the dry well of soil was removed and transported off site to Hillsboro Landfill for disposal. Analytical results are summarized in Table 20.

#### **VOCs**

The VOCs acetone and 1,1,2-Trichloro-1,2,2-trifluoro were detected in sample Piping-17 (0.5-1.0) and DrywellSeds-1, respectively, at concentrations significantly less than the corresponding MTCA Method B protective values. MEK was also detected in sample Piping-17 (0.5-1.0) at a

concentration significantly less than the corresponding MTCA Method B protective value. Nonetheless, soil represented by sample Piping-17(0.5-1.0) was removed during overexcavation activities, and the temporarily stockpiled sediment was transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil samples collected from the final limits of the remedial excavation indicate that the VOC-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal, except at the location of sample Piping-17ox(2.0-2.5). Acetone was detected at a concentration of 89 µg/Kg in sample Piping-17ox(2.0-2.5), which is significantly less than the corresponding Method B Protective Value of 8,000,000 µg/Kg. Analytical results are summarized in Table 21.

#### SVOCs

SVOCs were not detected in any of the soil samples collected from Cleanup Action Area 5. Analytical results are summarized in Table 22.

#### PAHs

No more than nine PAHs were detected in soil samples Stockpile-1 and Piping-17 (0.5-1.0). Carcinogenic PAHs, including benzo(a)anthracene, benzo(a)pyrene, chrysene, and indeno(1,2,3-cd)pyrene, were detected in sample Piping-17 (0.5-1.0) at concentrations greater than the corresponding MTCA Method A cleanup level. The remaining non-carcinogenic PAHs detected in both samples were less than the corresponding MTCA Method B protective values. Soil represented by sample Piping-17(0.5-1.0) was removed during overexcavation activities and the temporarily stockpiled soil generated during decommissioning activities associated with the dry well and drum storage area was transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil samples collected from the final limits of the remedial excavation indicate that the PAH-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. No other PAHs were detected in any of the remaining confirmation soil samples. Analytical results are summarized in Table 23.

#### Metals

Arsenic, cadmium, chromium, copper, lead, zinc, and/or mercury were detected in each of the soil samples collected from Cleanup Action Area 5. However, only cadmium in sample Septic-2-7.5 (collected from native soil at the base of the septic tank) was detected at a concentration greater than the corresponding MTCA Method A cleanup level. Soil represented by sample Septic-2-7.5 was removed during overexcavation activities and transported off site to Hillsboro Landfill for disposal. The result of the confirmation soil sample collected from the base of the resulting overexcavation indicate that the cadmium-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. Analytical results are summarized in Table 24.

#### **6.10.2.4 Backfill Activities**

Each of the remedial excavations completed in Cleanup Action Area 5 were backfilled to the existing grade using clean excess soil that was removed from Cleanup Action Area 3. Backfilling was conducted in accordance with the backfilling procedures outlined in Appendix A.

## **6.11 CLEANUP ACTION AREA 6 – FORMER VANCOUVER CHAINSAW AND SERVICE**

This area is shown on Figures 2 and 13.13. The area included:

- One french drain feature
- One septic tank
- One septic distribution box
- Associated piping

The french drain feature was constructed of coarse drain rock and measured approximately 8 feet long, by 4 feet wide and extended to approximately 6.5 feet BGS. An approximate 4-inch-diameter perforated drain line extended from the french drain approximately 20 feet to the north. The perforated pipe was wrapped with geotextile fabric, and surrounded by coarse drain rock.

One septic tank was identified at Cleanup Action Area 6. The septic tank was connected to a concrete septic distribution via underground piping. Two individual effluent “leach lines” extended from the distribution box. The septic system identified at Cleanup Action Area 6 is shown on Figure 13.

### **6.11.1 Non-Excavation Activities**

#### **6.11.1.1 Septic System Decommissioning**

Ted-Dee Bear Septic Service completed pumping the contents from the septic tank on March 17, 2008. The septic tank was subsequently abandoned by demolishing the concrete lid and filling the void spaces with clean excess soil that was removed from Cleanup Action Area 3 and/or pea gravel. Disposal receipts are included in Appendix E.

The entire septic distribution box was decommissioned by removal in November 2007 (GeoDesign, 2008a). No sludge or sediment was observed inside the distribution box at the time of decommissioning. Removal of the approximate 220 linear feet of underground piping associated with the septic system was completed on April 15, 2008. The concrete rubble and stockpiled material generated during the decommissioning activities transported to Hillsboro Landfill for disposal.

#### **6.11.1.2 French Drain Feature Decommissioning**

Bones Construction decommissioned the entire french drain system by removal on March 21, 2008. No sludge or sediment was observed within the perforated piping or french drain feature at the time of decommissioning. The stockpiled material generated during the decommissioning activities was ultimately disposed at Hillsboro Landfill.

### **6.11.2 Excavation Activities**

#### **6.11.2.1 General**

Remedial excavations at Cleanup Action Area 6 included an excavation associated with the distribution box remedial excavation activities, the underground piping overexcavation activities, and the french drain decommissioning activities. The final limits of the excavations are shown on Figure 13.

The vertical depth of the excavations associated with the french drain feature was approximately 7.5 feet BGS. The vertical depth of the excavation associated with the distribution box was approximately 6 feet BGS. Confirmation soil samples were collected from native soil beneath the base of the french drain feature, from the limits of the remedial excavation associated with distribution box, and beneath the removed piping, for the analysis presented in Table 1 in accordance with the methodology presented in Table 1. Additionally, a soil sample was collected from the temporarily stockpiled material generated during decommissioning activities prior to being transported off site to Hillsboro Landfill for disposal.

Sample collection was conducted in accordance with the soil sampling procedures outlined in Appendix A. The confirmation soil samples collected from Cleanup Action Area 6 were analyzed for the contaminants presented in Table 1 by the methodology presented in Table 1.

#### **6.11.2.2 Field Screening Results**

PID readings from the vapor headspace tests performed on confirmation soil samples submitted for chemical analysis from Cleanup Action Area 6 ranged between 0.0 and 1.4 ppm. No visual or sheen evidence of contamination was observed in any of the confirmation samples submitted for chemical analysis. The field screening results are summarized in Table 25.

#### **6.11.2.3 Analytical Results**

##### **Gasoline-, Diesel- and Heavy Oil-Range Hydrocarbons**

Petroleum hydrocarbons were not qualitatively detected in any of the soil samples submitted for analysis from Cleanup Action Area 6, with the exception of soil sample Piping-11(4.0-4.5). Although heavy oil-range hydrocarbons were qualitatively detected in confirmation soil sample Piping-11(4.0-4.5), follow-up quantification did not detect in diesel- or heavy oil-range hydrocarbons. Analytical results are summarized in Table 25.

##### **VOCs**

Only once VOC, acetone, was detected in sample Piping-18 (3-3.5) at a concentration significantly less than the corresponding MTCA Method B protective value of 8,000,000 µg/Kg. Nonetheless, soil represented by sample Piping-18(3-3.5) was removed during overexcavation activities and transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil samples collected from the final limits of the overexcavation indicate that the VOC-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. No other VOCs were detected in any of the remaining confirmation soil samples. Analytical results are summarized in Table 26.

##### **SVOCs**

SVOCs were not detected in any of the soil samples collected from Cleanup Action Area 6. Analytical results are summarized in Table 27.

##### **PAHs**

No more than 13 PAHs were detected in soil samples Drainline-1, Piping-8(3.5-4.0), Piping-11(4.0-4.5), Piping-18 (3-3.5), Piping-19 (3-3.5), and Piping-20 (3-3.5). Several carcinogenic PAHs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, Benzo(k)fluoranthene, chrysene, Dibenzo(a,h)anthracene, and/or indeno(1,2,3-cd)pyrene, were



detected in each of these samples at concentrations greater than the corresponding MTCA Method A cleanup levels. The remaining non-carcinogenic PAHs detected in each sample were less than the corresponding MTCA Method B protective values. Soil represented by each of these samples was removed during overexcavation activities and was transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil samples collected from the final limits of the over-excavations indicate that the PAH-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. No other PAHs were detected in any of the remaining confirmation soil samples. Analytical results are summarized in Table 28.

### **Metals**

Concentrations of arsenic, chromium, copper, lead, zinc, and/or mercury were detected in each of the soil samples collected from Cleanup Action Area 6. The detected concentrations were less than the corresponding MTCA Method A cleanup levels or MTCA Method B protective values. Analytical results are summarized in Table 29.

#### **6.11.2.4 Backfill Activities**

Each of the remedial excavations completed in Cleanup Action Area 6 were backfilled to the existing grade using clean excess soil that was removed from Cleanup Action Area 3. Backfilling was conducted in accordance with the backfilling procedures outlined in Appendix A.

### **6.12 CLEANUP ACTION AREA 7 – FORMER DRAINAGE FEATURE NEAR HANGAR BUILDING NO. 2**

This area is shown on Figures 2 and 14. The area included a previously unidentified surface drainage feature that was constructed of two partially buried upside down 55-gallon plastic containers and one partially buried upside down 55-gallon metal drum. The containers were buried flush with the ground surface, and two of the containers had small openings cut in the bottoms (flush with the ground surface). This surface drainage feature was not connected to a dry well and appeared to be designed and constructed to collect surface water at a topographical low area immediately north of hangar unit no. 15 of Hangar Building No. 2 (Figure 14).

#### **6.12.1 Non-Excavation Activities**

##### **6.12.1.1 Drainage Feature Decommissioning**

Bones Construction decommissioned the drainage feature by removal on March 26, 2008. Sludge or sediment was not observed within the drum's drainage feature at the time of decommissioning. The stockpiled material generated during the decommissioning activities was disposed at Hillsboro Landfill.

#### **6.12.2 Excavation Activities**

##### **6.12.2.1 General**

Remedial excavations at Cleanup Action Area 7 included an excavation associated with removal of the surface drain during the decommissioning activities. The final limits of the excavation associated with the decommissioning activities are shown on Figure 14.

The vertical depth of the excavation associated with the surface drain feature was approximately 4 feet BGS. Confirmation soil samples were collected from the limits of the remedial excavation associated with the surface drain feature for the contaminants presented in Table 1 in accordance

with the methodology presented in Table 1. Additionally, soil samples were collected from the temporarily stockpiled material generated during decommissioning activities prior to being transported off site to Hillsboro Landfill for disposal. Sample collection was conducted in accordance with the soil sampling procedures outlined in Appendix A.

#### **6.12.2.2 Field Screening Results**

PID readings from the vapor headspace tests performed on confirmation soil samples submitted for chemical analysis from Cleanup Action Area 7 ranged between 0.4 and 6.7 ppm. No visual or sheen evidence of contamination was observed in any of the confirmation samples submitted for chemical analysis. The field screening results are summarized in Table 30.

#### **6.12.2.3 Analytical Results**

##### **Gasoline-, Diesel- and Heavy Oil-Range Hydrocarbons**

Petroleum hydrocarbons were not qualitatively detected in any of the soil samples submitted for analysis from Cleanup Action Area 7. Analytical results are summarized in Table 30.

##### **VOCs**

VOCs were not detected in any of the soil samples submitted for analysis from Cleanup Action Area 7. Analytical results are summarized in Table 31.

##### **SVOCs**

Two SVOCs, hexachloroethane and naphthalene, were detected in soil sample CAA-7-3(3.0-3.5) at concentrations significantly less than the corresponding MTCA Method B protective value of 71,000 µg/Kg and MTCA Method A cleanup level of 5,000 µg/Kg, respectively. Nonetheless, soil represented by this sample was removed during overexcavation activities and was transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil samples collected from the final limits of the overexcavation indicate that the SVOC-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. No other SVOCs were detected in any of the remaining confirmation soil samples. Analytical results are summarized in Table 32.

##### **PAHs**

PAHs were not detected in any of the soil samples submitted for analysis from Cleanup Action Area 7. Analytical results are summarized in Table 33.

##### **Metals**

Concentrations of arsenic, chromium, copper, lead, and zinc were detected in each of the soil samples collected from Cleanup Action Area 7. The detected concentrations were less than the corresponding MTCA Method A cleanup levels or MTCA Method B protective values. Analytical results are summarized in Table 34.

#### **6.12.2.4 Backfill Activities**

Each of the remedial excavations completed in Cleanup Action Area 7 were backfilled to the existing grade using clean excess soil that was removed from Cleanup Action Area 3. Backfilling was conducted in accordance with the backfilling procedures outlined in Appendix A.

### **6.13 CLEANUP ACTION AREA 8 – NORTHERN PORTION OF EVERGREEN FLIGHT SERVICE**

This area is shown on Figures 2 and 15.15. The area included:

- An isolated surface spill of red paint
- Three ASTs
- A 55-gallon drum of red paint

During demolition of Evergreen Flight Service Building, one 55-gallon drum of red paint was encountered hidden within a thicket of blackberry bushes. A small quantity (estimated 1 to 3 gallons) of red paint spilled from a puncture near the top of the drum onto the surface of the soil. A separate stain of red paint, immediately adjacent to the recent stain, appeared to have happened from a spill, presumably from the same drum, sometime previously.

#### **6.13.1 Pre-Remedial Excavation Activities**

##### **6.13.1.1 Disposal of Listed Waste – Contained Out Determination**

GeoDesign requested written approval (GeoDesign, 2008b) from Ecology to dispose the impacted soil from the drum of red paint (designated as “F002 listed dangerous waste”) as non-dangerous waste using Ecology’s “Contained-In” policy. Ecology reviewed the information submitted with the written request and determined that the soils contained F002-listed dangerous waste constituents at concentrations that did not warrant management as dangerous wastes (Ecology, 2008). Ecology did not require disposal of these soils as listed wastes at a permitted TSD facility, provided the criteria outlined in their Contained-In Determination letter (Ecology, 2008) was met. The punctured drum will be transported and disposed at Hillsboro Landfill.

##### **6.13.1.2 AST Removal**

Elder Demolition removed one remaining empty 275-gallon AST (identified as AST-3) located east of Evergreen Flight Service during the week of March 31, 2008 and transported it with other scrap metal to Quantum Resource Recovery Inc. for recycling. A copy of the recycling receipt is presented in Appendix C. The other ASTs (identified as AST-4 and AST-5) formerly located near Evergreen Flight Service were removed prior to beginning the cleanup actions, presumably by the former tenant.

#### **6.13.2 Remedial Excavation Activities**

##### **6.13.2.1 General**

Remedial excavations at Cleanup Action Area 8 included the excavation of the near-surface impacted soil associated with the spill of red paint and remedial excavations associated with near-surface impacts of petroleum hydrocarbons associated with the former heating oil ASTs. The final limits of the excavations are shown on Figure 15.

The vertical depth of the excavation associated with the spilled paint was approximately 4 feet BGS. The vertical depths of the excavations associated with hydrocarbon-impacted soil beneath the former heating oil ASTs ranged between approximately 0.5 foot and 2.5 feet BGS. Confirmation soil samples were collected from the limits of the remedial excavations for the contaminants presented in Table 1 in accordance with the methodology presented in Table 1. Additionally, soil samples were collected from the temporarily stockpiled material generated

during decommissioning activities prior to being transported off site to Hillsboro Landfill for disposal. Sample collection was conducted in accordance with the soil sampling procedures outlined in Appendix A.

#### **6.13.2.2 Field Screening Results**

PID readings from the vapor headspace tests performed on confirmation soil samples submitted for chemical analysis from Cleanup Action Area 8 ranged between 0.0 and 1.6 ppm. No visual or sheen evidence of contamination was observed in any of the confirmation samples submitted for chemical analysis. The field screening results are summarized in Table 35.

#### **6.13.2.3 Analytical Results**

##### **Gasoline-, Diesel- and Heavy Oil-Range Hydrocarbons**

Diesel- and/or heavy oil-range hydrocarbons were qualitatively detected in soil samples CAA-8-1-4(3.0-3.5), CAA-8-1-4ox (3-3.5), Stockpile-25, AST-3(0.5-0.75), AST-3OX (0.75-1), AST-4(0.5-1.0), and Dup-6. The laboratory estimated the concentrations of gasoline-, diesel-, and heavy oil-range hydrocarbons in soil sample Stockpile-25 based on the HCID analysis quantitation. Diesel- and/or heavy oil-range hydrocarbons were quantitatively detected in soil samples CAA-8-1-4(3.0-3.5), CAA-8-1-4ox (3-3.5), AST-3ox (1-1.25), and Dup-9 at concentrations less than the corresponding MTCA Method A cleanup levels of 2,000 mg/Kg. Nonetheless, soil represented by each of these samples was removed during overexcavation activities and was transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil samples collected from the final limits of the overexcavations indicate that the diesel- and heavy oil-range hydrocarbon-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. Petroleum hydrocarbons were not detected in any of the remaining soil samples submitted for analysis. Analytical results are summarized in Table 35.

##### **VOCs**

VOCs were not detected in any of the soil samples submitted for analysis from Cleanup Action Area 8. Analytical results are summarized in Table 36.

##### **SVOCs**

SVOCs were not detected in any of the soil samples submitted for analysis from Cleanup Action Area 8. Analytical results are summarized in Table 37.

##### **PAHs**

PAHs were not detected in any of the soil samples submitted for analysis from Cleanup Action Area 8. Analytical results are summarized in Table 38.

##### **Metals**

Concentrations of arsenic, cadmium, chromium, copper, lead, zinc and/or mercury were detected in each of the soil samples collected from Cleanup Action Area 8. However, only cadmium and lead detected were detected in sample Stockpile-25 at concentrations greater than the corresponding MTCA Method A cleanup levels of 2.0 mg/Kg and 250 mg/Kg, respectively. The stockpiled soil generated during the remedial excavations associated with Cleanup Action Area 8 was transported off site to Hillsboro Landfill for disposal. Analytical results are summarized in Table 39.

#### **6.13.2.4 Backfill Activities**

Each of the remedial excavations completed in Cleanup Action Area 8 were backfilled to the existing grade using clean excess soil that was removed from Cleanup Action Area 3. Backfilling was conducted in accordance with the backfilling procedures outlined in Appendix A.

#### **6.14 CLEANUP ACTION AREA 9 – FORMER AURORA AVIONICS AND LIGHTS**

This area is shown on Figures 2 and 16. The area included:

- One septic tank
- One dry well
- Associated piping

One septic tank was identified at Cleanup Action Area 9. The septic tank was connected to one active dry well (identified as dry well-7). The active dry well connected to the septic tank was constructed of two perforated concrete collars measuring approximately 4.5 feet in diameter. The total depth of the active dry well was approximately 9 feet BGS. Coarse rounded drain rock was observed surrounding the dry well. The septic system identified at Cleanup Action Area 9 is shown on Figure 16.

#### **6.14.1 Non-Excavation Activities**

##### **6.14.1.1 Septic System Decommissioning**

Ted-Dee Bear Septic Service completed pumping the contents from the septic tank on April 10, 2008. The septic tank was subsequently abandoned by demolishing the concrete lid and filling the void spaces with clean excess soil that was removed from Cleanup Action Area 3 and/or pea gravel. Disposal receipts are included in Appendix E.

Bones Construction decommissioned the entire dry well by removal on April 10, 2008. Approximately 50 linear feet of the associated piping was also removed on April 10, 2008. No liquid or sludge was observed within the dry well. Coarse rounded drain rock was observed surrounding the dry well during the decommissioning activities. The concrete rubble generated during the decommissioning activities was recycled on site. The stockpiled material generated during the decommissioning activities was disposed at Hillsboro Landfill.

#### **6.14.2 Excavation Activities**

##### **6.14.2.1 General**

Excavations at Cleanup Action Area 9 included a remedial excavation associated with the dry well decommissioning activities and overexcavation associated with the piping. The final limits of the excavations are shown on Figure 16.

The vertical depth of the excavation associated with the dry well connected to the septic tank was approximately 10.5 feet BGS. Confirmation soil samples were collected from the sediment within the dry well, from native soil beneath the dry well, and beneath the removed piping for the contaminants presented in Table 1 in accordance with the methodology presented in Table 1. Additionally, soil samples were collected from the temporarily stockpiled material generated

during decommissioning activities prior to being transported off site to Hillsboro Landfill for disposal. Sample collection was conducted in accordance with the soil sampling procedures outlined in Appendix A.

#### **6.14.2.2 Field Screening Results**

PID readings from the vapor headspace tests performed on confirmation soil samples submitted for chemical analysis from Cleanup Action Area 9 ranged between 0.6 and 4.9 ppm. No visual or sheen evidence of contamination was observed in any of the confirmation samples submitted for chemical analysis. The field screening results are summarized in Table 40.

#### **6.14.2.3 Analytical Results**

##### **Gasoline, Diesel, and Heavy Oil-Range Hydrocarbons**

Heavy oil-range hydrocarbons were qualitatively detected in soil sample DrywellSeds-7. The laboratory estimated the concentrations of heavy oil-range hydrocarbons in this sample based on the HC10 analysis quantitation. The estimated concentration of heavy oil-range hydrocarbons was less than the corresponding MTCA Method A cleanup level of 2,000 mg/Kg. Nonetheless, the sediment represented by this sample was removed during overexcavation activities and was transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil sample collected from the native soil beneath the removed sediment within the dry well indicate that the heavy oil-range hydrocarbon-impacted sediment was successfully removed and transported to Hillsboro Landfill for disposal. Petroleum hydrocarbons were not detected in any of the remaining confirmation soil samples. Analytical results are summarized in Table 40.

##### **VOCs**

One VOC, PCE, was detected in soil sample Piping-4(2.0-2.5) at a concentration less than the corresponding MTCA Method A cleanup level of 50 µg/Kg. Nonetheless, soil represented by this sample was removed during overexcavation activities and was transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil sample collected from the final limits of the over-excavation indicate that the PCE-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. VOCs were not detected in any of the remaining confirmation soil samples. Analytical results are summarized in Table 41.

##### **SVOCs**

One SVOC, Bis(2-ethylhexyl)phthalate, was detected in soil sample DrywellSeds-7 at a concentration less than the corresponding MTCA Method B protective value of 71,000 µg/Kg. Nonetheless, sediment represented by this sample was removed during overexcavation activities and was transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil sample collected from the native soil beneath the removed sediment within the dry well indicate that the SVOC-impacted sediment was successfully removed and transported to Hillsboro Landfill for disposal. SVOCs were not detected in any of the remaining confirmation soil samples. Analytical results are summarized in Table 42.

##### **PAHs**

PAHs were not detected in any of the soil samples submitted for analysis from Cleanup Action Area 9. Analytical results are summarized in Table 43.

## **Metals**

Concentrations of arsenic, cadmium, chromium, copper, lead, tin, zinc and/or mercury were detected in each of the soil samples collected from Cleanup Action Area 9. However, only cadmium and mercury detected in sample DrywellSeds-7 exceeded the corresponding MTCA Method A cleanup level of 2.0 mg/Kg. Consequently, the sediment represented by this sample was removed during overexcavation activities and was transported off site to Hillsboro Landfill for disposal. The results of the confirmation soil sample collected from the native soil beneath the sediment within the dry well indicate that the elevated metals-impacted sediment (at concentrations exceeding MTCA screening criteria) was successfully removed and transported to Hillsboro Landfill for disposal. Analytical results are summarized in Table 4.

### **6.14.2.4 Backfill Activities**

Each of the remedial excavations completed in Cleanup Action Area 9 were backfilled to the existing grade using clean excess soil that was removed from Cleanup Action Area 3. Backfilling was conducted in accordance with the backfilling procedures outlined in Appendix A.

### **6.15 CLEANUP ACTION AREA 10 – FORMER NW ANTIQUE AIRCRAFT CLUB**

This area is shown on Figures 2 and 17. The area included:

- One septic tank
- One dry well
- Associated piping

One septic tank was identified at Cleanup Action Area 10. The septic tank was connected to one active dry well (identified as dry well-8). The active dry well connected to the septic tank was constructed of two perforated concrete collars measuring approximately 4.5 feet in diameter. The total depth of the active dry well was approximately 7 feet BGS. Coarse rounded drain rock was observed surrounding the dry well. The layout of the septic system identified at Cleanup Action Area 10 is shown on Figure 17.

#### **6.15.1 Non-Excavation Activities**

##### **6.15.1.1 Septic System Decommissioning**

Ted-Dee Bear Septic Service completed pumping the contents from the septic tank on March 17, 2008. The septic tank was subsequently abandoned by demolishing the concrete lid and filling the void spaces with clean excess soil that was removed from Cleanup Action Area 3 and/or pea gravel. Disposal receipts are included in Appendix E.

Bones Construction decommissioned the entire dry well by removal on April 25, 2008. The approximate 20 linear feet of associated piping was removed on April 25, 2008. No liquid or sludge was observed within the dry well. Coarse rounded drain rock was observed surrounding the dry well during the decommissioning activities. The concrete rubble generated during the decommissioning activities was recycled on site. The stockpiled material generated during the decommissioning activities was ultimately disposed at Hillsboro Landfill.

## **6.15.2 Excavation Activities**

### **6.15.2.1 General**

Excavations at Cleanup Action Area 10 included a remedial excavation associated with the dry well decommissioning activities. The final limits of the excavations are shown on Figure 17.

The vertical depth of the excavation associated with the dry well connected to the septic tank was approximately 8 feet BGS. Confirmation soil samples were collected from the sediment within the dry well, from native soil beneath the dry well, and beneath the removed piping for the contaminants presented in Table 1 in accordance with the methodology presented in Table 1. Additionally, soil samples were collected from the temporarily stockpiled material generated during decommissioning activities prior to being transported off site to Hillsboro Landfill for disposal. Sample collection was conducted in accordance with the soil sampling procedures outlined in Appendix A.

### **6.15.2.2 Field Screening Results**

PID readings from the vapor headspace tests performed on confirmation soil samples submitted for chemical analysis from Cleanup Action Area 10 ranged between 0.0 and 1.4 ppm. No visual or sheen evidence of contamination was observed in any of the confirmation samples submitted for chemical analysis. The field screening results are summarized in Table 45.

### **6.15.2.3 Analytical Results**

#### **Gasoline-, Diesel- and Heavy Oil-Range Hydrocarbons**

Petroleum hydrocarbons were not detected in any of the soil samples submitted for analysis from Cleanup Action Area 10. Analytical results are summarized in Table 45.

#### **VOCs**

No VOCs were detected in any of the soil samples submitted for analysis from Cleanup Action Area 10. Analytical results are summarized in Table 46.

#### **SVOCs**

SVOCs were not detected in any of the soil samples submitted for analysis from Cleanup Action Area 10. Analytical results are summarized in Table 47.

#### **PAHs**

PAHs were not detected in any of the soil samples submitted for analysis from Cleanup Action Area 10. Analytical results are summarized in Table 48.

#### **Metals**

Concentrations of arsenic, chromium, copper, lead, and zinc were detected in each of the soil samples collected from Cleanup Action Area 10 at concentrations less than the corresponding MTCA Method A cleanup levels or MTCA Method B protective values. Analytical results are summarized in Table 49.



#### **6.15.2.4 Backfill Activities**

Each of the remedial excavations completed in Cleanup Action Area 10 were backfilled to the existing grade using clean excess soil that was removed from Cleanup Action Area 3. Backfilling was conducted in accordance with the backfilling procedures outlined in Appendix A.

### **6.16 GROUNDWATER RESULTS**

#### **6.16.1 Previous Groundwater Results**

As described in Section 3.2.1 of this report, groundwater monitoring and sampling events were completed in July 2005, February, July and August 2006 from all three groundwater monitoring wells. Groundwater samples were again collected from monitoring well MW-2 in November 2006, as requested by Ecology. The purpose of the November 2006 groundwater sampling event was to further evaluate groundwater conditions beneath the site, and based on the results, evaluate the need for additional monitoring and sampling.

The results of the previous groundwater monitoring and sampling events indicated that groundwater beneath the project site was not impacted by site-related chemicals, including petroleum hydrocarbons, VOCs, SVOCs, PAHs, PCBs and metals. Although certain total metals from representative groundwater samples were detected above laboratory MRLs, the concentrations do not exceed MTCA cleanup levels, and concentrations are consistent with naturally occurring regional groundwater background concentrations. Further, petroleum hydrocarbons, VOCs, PAHs, and PCBs were not detected above laboratory MRLs in the grab groundwater sample collected from the perched zone during drilling of monitoring well MW-2.

In light of the previously unknown drainage feature and the presence of F-listed waste (most notably PCE) encountered at Cleanup Action Area 2, Ecology requested another round of groundwater monitoring and sampling occur from all three existing monitoring wells to include analysis for the full suite of constituents that had been analyzed in previous sampling events, plus pesticides.

#### **6.16.2 Recent Groundwater Results**

##### **6.16.2.1 Groundwater Conditions**

Depths to groundwater relative to the monitoring well casing rims were measured on May 12, 2008, using an electronic water-level indicator. The electronic water-level indicator was decontaminated with Alconox solution wash and a distilled water rinse prior to use in each well. Groundwater elevations were calculated by subtracting the water table depth from the surveyed casing rim elevations. The well casing and groundwater elevation data are presented in Table 50. The potentiometric groundwater surface elevation contour map interpreted from the May 12, 2008 data is shown on Figure 2.

Based on the April 2008 monitoring data, the inferred groundwater flow direction is toward the south-southwest at a gradient of approximately 0.003 foot/foot. This inferred flow direction is inconsistent with those determined during the previous monitoring events (previously south-southeast).

#### **6.16.2.2 Groundwater Sampling**

Groundwater samples were collected from all three of the monitoring wells on May 12, 2008. Each groundwater sample was collected using a submersible bladder pump with disposable tubing. The sampling followed standard protocol for low-flow purging and sampling (U.S. EPA 1996). Non-disposable sampling equipment, including the submersible bladder pump, was decontaminated before each sample was collected. Purging continued until the following parameters stabilized as indicated:

- pH +/- 0.1 unit
- temperature +/- 1 degree Celsius
- specific conductance +/- 3 percent ohm-cm
- dissolved oxygen +/- 10 percent mg/L
- ORP +/- 10 mV
- Turbidity +/- 10 percent NTUs

The groundwater samples were transferred in the field to laboratory-prepared sample containers and kept cool during transport to the testing laboratory. The sample containers were filled completely to eliminate headspace in the container. Chain-of-custody procedures were observed during transport of the groundwater samples to the testing laboratory.

Purge water generated during the May 12, 2008 purging and sampling activities was placed in secured and labeled 55-gallon drums and will be transported to a recycling facility at a later date. Groundwater sampling procedures are presented in Appendix A.

#### **6.16.2.3 Groundwater Analytical Results**

The groundwater samples were submitted for the analysis listed in Section 6.3 of this report. Samples collected for dissolved metals were filtered in the field using a 0.45 micron filter. The chemical analytical results for the groundwater samples are summarized in Tables 51 through 57. Petroleum hydrocarbons, VOCs, SVOCs, PAHs, PCBs, pesticides, and dissolved metals were not detected in any of the groundwater samples submitted for analysis. The only total metal detected was zinc in monitoring well MW-3 at a concentration of 5.72 mg/L, which is significantly less than the corresponding Method B protective value of 4,800 mg/L.

The results of the May 12, 2008 groundwater monitoring and sampling event are consistent with the results of previous events. The data indicate that site-related chemicals, including PCE, have not impacted groundwater beneath the project site. Based on the groundwater results to date (particularly the absence of VOCs, including PCE), it is our opinion that further groundwater investigation or continued monitoring and sampling is not warranted based on the following:

- PCE-impacted soil is limited in extent and is not present in the samples collected approximately 2 and 4 feet beneath the sample that exhibited the presence of PCE.
- PCE was not detected in soil samples collected at depths of 90 and 175 feet BGS during installation of monitoring well MW-2, located only approximately 40 feet southwest of the formerly buried drums.
- PCE was not detected in shallow perched water (encountered at approximately 86 feet BGS) in monitoring well MW-2.

- PCE was not detected in any of the groundwater samples collected from monitoring well MW-2 during any of the previous monitoring events.
- The concentration of PCE detected in sample "GeoDesign 4808-001" is less than the Method B protective value for direct contact (1.9 mg/Kg).
- Based on the concentration of PCE detected in the soil (0.190 mg/Kg), the leaching concentration of PCE would not exceed 10 times the MTCA Method A groundwater cleanup level for PCE (0.050 mg/L) and would be less than the Method B non-carcinogenic groundwater protective value for PCE (0.08 mg/L) using an approximate 20-fold dilution.

## 7.0 CONCLUSIONS

### 7.1 SUMMARY

Based on the results of confirmation soil samples collected from the limits of the remedial excavations, the following can be concluded for each Cleanup Action Area:

#### Cleanup Action Areas 1A, 1B, 1C, and 1D

In accordance with the Ecology-approved Final Proposed Cleanup Action Work Plan, confirmation soil samples collected from Cleanup Action Areas 1A, 1B, 1C, and 1D were analyzed for diesel- and heavy oil-range hydrocarbons, cadmium, chromium, and lead.

In general, the vertical depth of impacted soil identified in the hanger units was limited to the upper 1 foot of soil, with the exception of one isolated area of Cleanup Action Area 1A, one isolated area of Cleanup Action Area 1B and four isolated areas of Cleanup Action Area 1D, which required overexcavation to depths up to 2 feet BGS. The results of the confirmation soil samples collected from the sidewalls (if greater than 1 foot in depth) and base of the final excavation limits indicate that the petroleum-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal.

Cadmium was not detected in any of the confirmation soil samples collected from the final excavation limits at Cleanup Action Areas 1A, 1B, 1C and 1D. Chromium and lead were detected in several of the confirmation soil samples collected from the final excavation limits at concentrations less than corresponding MTCA Method A cleanup levels.

#### Cleanup Action Area 2

The planned analytical program outlined in the Ecology-approved Final Proposed Cleanup Action Work Plan for Cleanup Action Area 2 was amended due to the presence of a previously unknown drainage feature that was encountered beneath the concrete floor slab, adjacent to the underground sump. Based on the characterization results of the soil surrounding the sump and previously unknown drainage feature and the historical characterization data from the liquid previously identified within the sump, the confirmation soil samples collected from the final excavation limits associated with the sump and drainage feature and gutter and settlement cells were analyzed for petroleum hydrocarbons, VOCs, SVOCs, PAHs, pesticides, PCBs, and metals. The confirmation soil samples collected during the dry well decommissioning activities and beneath the cistern were analyzed for petroleum hydrocarbons, VOCs, SVOCs, PAHs, and metals. The confirmation soil samples collected beneath the removed ASTs were analyzed for petroleum hydrocarbons.

The results of the confirmation soil samples that were collected from the sidewalls and base of the final excavation limits associated with the sump and drainage feature and gutter and settlement cells (with the exception of confirmation soil samples CAA-2-23ox[11.0-11.5] and CAA-2-24ox[10.5-11.0]) indicate that the impacted soil was successfully removed and transported to Hillsboro Landfill for disposal, in accordance with Ecology's Contained-In determination. Although concentrations of select SVOCs and PCBs detected in samples CAA-2-23ox(11.0-11.5) and CAA-2-24ox(10.5-11.0) were less than corresponding MTCA screening criteria, further overexcavation activities were completed on June 3, 2008 in an attempt to remove the impacted soil represented by these two samples. The results of the overexcavation activities will be provided in a forthcoming report. The results of the confirmation soil samples collected from the sidewalls and base of the final excavation limits associated with the ASTs indicate that the petroleum-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal.

With the exception of cadmium in four soil samples, total metals concentrations detected in confirmation soil samples collected from the final limits of the remedial excavation associated with the sump and drainage feature and gutter and settlement cells were less than corresponding MTCA screening criteria and less than natural background concentrations in surficial soil in Clark County (Ecology, 1994). Confirmation soil sample CAA-2-22(10.5-11.0), collected from the final base of the excavation associated with the sump and drainage feature, and CAA-2-28(4.5-5.0), collected from the final base of the excavation associated with the gutter and settlement cells, exhibited the highest cadmium concentrations of 7.72 mg/Kg and 6.37 mg/Kg, respectively, which exceed the MTCA Method A cleanup level of 2.0 mg/Kg, but not the Method B protective level of 80.0 mg/Kg. Since the MTCA Method A cleanup level is based on protection of groundwater for drinking water use, the SPLP procedure in WAC 173-340-747(7) for samples CAA-2-22(10.5-11.0) and CAA-2-28(4.5-5.0) was analyzed. The resulting leaching test effluent concentrations are less than the reporting limit of 0.01 mg/L. This reporting limit is less than 10 times the applicable groundwater cleanup level for cadmium (0.050 mg/L). Therefore, the resulting leaching test effluent concentrations are considered protective of groundwater. Additionally, cadmium was not detected in the groundwater samples collected from any of the monitoring wells. Based on this information, the cadmium-impacted soil beneath the former sump and drainage feature and gutter and settlement cells does not present unacceptable risk to human health.

### **Cleanup Action Area 3**

In accordance with the Ecology-approved Final Proposed Cleanup Action Work Plan, confirmation soil samples collected from the fueling area at Cleanup Action Area 3 were analyzed for gasoline-, diesel- and heavy oil-range hydrocarbons, BETX, TBA, TAME, ETBE, ethanol and methanol, and total lead. Additionally, confirmation soil samples collected during the dry well decommissioning activities and beneath the associated piping were analyzed for petroleum hydrocarbons, VOCs, SVOCs, PAHs, and metals.

In general, the vertical depth of impacted soil at the former fueling area ranged from 15.5 to 16.5 feet BGS. The results of the confirmation soil samples collected from the sidewalls and base of the final excavation limits indicate that the petroleum-impacted soil was successfully removed

and transported to Hillsboro Landfill for disposal. Additionally, the results of the confirmation soil samples collected from base of the over-excavated material during the dry well decommissioning activities and beneath the associated piping indicate that contaminated soil was successfully removed and transported to Hillsboro Landfill for disposal.

#### **Cleanup Action Area 4**

In accordance with the Ecology-approved Final Proposed Cleanup Action Work Plan, confirmation soil samples collected from the excavation south of the former paint booth at Cleanup Action Area 4 were analyzed for total cadmium. Additionally, confirmation soil samples collected during the dry well decommissioning activities and beneath the associated piping were analyzed for petroleum hydrocarbons, VOCs, SVOCs, PAHs and metals.

In general, the vertical depth of the cadmium-impacted soil south of the former paint booth was approximately 3.5 feet BGS. The results of the confirmation soil samples collected from the sidewalls and base of the final excavation limits indicate that the cadmium-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. Additionally, the results of the confirmation soil samples collected from base of the overexcavated material during the dry well decommissioning activities and beneath the associated piping (with the exception of soil represented by sample Piping-14ox(1.5-2.0), indicate that contaminated soil was successfully removed and transported to Hillsboro Landfill for disposal. Acetone was detected at a concentration of 67 µg/Kg in sample Piping-14ox(1.5-2.0). This detected concentration is significantly less than the corresponding Method B protective value of 8,000,000 µg/Kg.

#### **Cleanup Action Area 5**

In accordance with the Ecology-approved Final Proposed Cleanup Action Work Plan, the confirmation soil sample collected from the excavation associated with the former drum storage area was analyzed for diesel- and heavy oil-range hydrocarbons and cadmium, chromium, and lead. Additionally, confirmation soil samples collected from the excavation associated with the bottomless septic tank, during the dry well decommissioning activities and beneath the associated piping were analyzed for petroleum hydrocarbons, VOCs, SVOCs, PAHs, and metals.

The results of the confirmation soil sample collected from the final excavation limits associated with the drum storage area, bottomless septic tank, and dry well and piping decommissioning activities (with the exception of soil represented by sample Piping-17ox(2.0-2.5)) indicate that the impacted soil was successfully removed and transported to Hillsboro Landfill for disposal. Acetone was detected at a concentration of 89 µg/Kg in sample Piping-17ox(2.0-2.5), which is significantly less than the corresponding Method B protective value of 8,000,000 µg/Kg.

Some metals, including arsenic, cadmium, chromium, copper, lead zinc and mercury were detected in several of the confirmation soil samples collected from the final excavation limits at concentrations less than corresponding MTCA screening criteria.

#### **Cleanup Action Area 6**

Based on the March 2008 supplemental characterization activities, the Ecology-approved Final Proposed Cleanup Action Work Plan was amended due to the presence of PAH-impacted soil in the vicinity of a septic distribution box that was encountered during septic tank

decommissioning activities. Additionally, a french drain feature was identified in this area. Confirmation soil samples collected from excavations associated with these features and beneath the piping were analyzed for petroleum hydrocarbons, VOCs, SVOCs, PAHs, and metals.

The results of the confirmation soil sample collected from the final excavation limits associated with the distribution box, the french drain feature, and piping decommissioning activities indicate that the impacted soil was successfully removed and transported to Hillsboro Landfill for disposal.

Some metals, including arsenic, chromium, copper, lead, zinc and mercury were detected in several of the confirmation soil samples collected from the final excavation limits at concentrations less than corresponding MTCA screening criteria.

#### **Cleanup Action Area 7**

During the planned cleanup actions, a surface drain feature was observed at a topographical low area immediately north of hangar unit no. 15 of Hangar Building No. 2. This surface drain feature was identified as Cleanup Action Area 7 and confirmation soil samples collected from the excavation associated with removal of the feature were analyzed for petroleum hydrocarbons, VOCs, SVOCs, PAHs, and metals.

The vertical depth of the excavation associated with the surface drain feature was approximately 4 feet BGS. The results of the confirmation soil sample collected from the final excavation limits associated with removal of the surface drain feature indicate that the impacted soil was successfully removed and transported to Hillsboro Landfill for disposal.

Some metals, including arsenic, chromium, copper, lead, and zinc were detected in each of the soil samples collected from the final excavation limits at concentrations less than corresponding MTCA screening criteria.

#### **Cleanup Action Area 8**

During demolition of the Evergreen Flight Service Building, a 55-gallon drum of red paint that was hidden within a thicket of blackberry bushes was encountered. The drum was inadvertently punctured and a small quantity (estimated 1 to 3 gallons) of red paint spilled onto the surface of the soil. A separate stain of red paint was observed immediately adjacent to the spill area. This stain was presumably from the same drum, appeared to have happened sometime previously. These isolated surface spills of red paint were identified as Cleanup Action Area 8. Included in this area are the three former ASTs. Confirmation soil samples collected from the excavation associated with removal of the spilled paint were analyzed for petroleum hydrocarbons, VOCs, SVOCs, PAHs, and metals. Confirmation soil samples collected from beneath the ASTs were analyzed for petroleum hydrocarbons.

The results of the confirmation soil samples collected from the sidewalls and base of the final excavation limits associated with the spilled paint indicate that the impacted soil associated with the spilled paint was successfully removed and transported to Hillsboro Landfill for disposal, in accordance with Ecology's Contained-In determination. The results of the confirmation soil

samples collected from the sidewalls and base of the final excavation limits associated with the ASTs also indicate that the petroleum-impacted soil was successfully removed and transported to Hillsboro Landfill for disposal.

Some metals, including arsenic, chromium, copper, lead, mercury, and zinc were detected in each of the soil samples collected from the final excavation limits at concentrations less than corresponding MTCA screening criteria.

#### **Cleanup Action Area 9**

After demolition of the Aurora Avionics and Lights building, a dry well associated with the former restroom inside the building was encountered and subsequently decommissioned. This dry well feature was identified as Cleanup Action Area 9 and confirmation soil samples collected from the excavation associated with the dry well and piping decommissioning activities were analyzed for petroleum hydrocarbons, VOCs, SVOCs, PAHs, and metals.

The results of the confirmation soil samples collected from the final excavation limits associated with the dry well and piping decommissioning activities indicate that the impacted soil was successfully removed and transported to Hillsboro Landfill for disposal.

Some metals, including arsenic, chromium, copper, lead, and zinc were detected in each of the soil samples collected from the final excavation limits at concentrations less than corresponding MTCA screening criteria.

#### **Cleanup Action Area 10**

The suspected drywell feature positively identified at the former Northwest Antique Aircraft Club during the cleanup actions was identified as Cleanup Action Area 10. Confirmation soil samples collected from the excavation associated with the dry well and associated piping decommissioning activities were analyzed for petroleum hydrocarbons, VOCs, SVOCs, PAHs, and metals.

The results of the confirmation soil samples collected from the final excavation limits associated with the dry well and piping decommissioning activities indicate that the impacted soil was successfully removed and transported to Hillsboro Landfill for disposal.

Some metals, including arsenic, chromium, copper, lead, and zinc were detected in each of the soil samples collected from the final excavation limits at concentrations less than corresponding MTCA screening criteria.

### **7.2 REQUEST FOR NFA OPINION**

GeoDesign is currently entering all of the data into Ecology's EIM system, as required under WAC 173-340-840(5). Once Ecology has completed its review of this report, and the data has been entered, we respectfully request Ecology to provide an Opinion on the completed cleanup actions. As described in Section 6.7.2.1 of this report, further overexcavation activities have been completed at Cleanup Action Area 2. The results of these overexcavation activities will be provided in a forthcoming report. The most recent overexcavation activities at Cleanup Action Area 2 were conducted in an attempt to remove all residually impacted soil, even though the

current residual concentrations do not exceed MTCA screening criteria. Therefore, a completed "Request for Opinion Form" is enclosed with this report. In our opinion, the current soil and groundwater data presented in this report warrant an Opinion of "No Further Action" for both soil and groundwater.

♦ ♦ ♦

We appreciate the opportunity to work with you on this project. Please call if you have questions concerning the information submitted.

Sincerely,

GeoDesign, Inc.



Kyle R. Sattler, L.G.  
Senior Project Geologist



KYLE RAYMOND SATTLER



Craig W. Ware, L.G.  
Principal Geologist



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